CONTENTS

Volume 33, Issue Nos. 1–10 (1992)

International Journal for

NUMERICAL METHODS IN ENGINEERING

*Issue No.* 1

On First- and Second-order Moderate Rotation Theories of Laminated Plates: E. Sacco and J. N. Reddy . . . . . 1

An Assumed-stress Hybrid 4-Node Shell Element with Drilling Degrees of Freedom: M. A. Aminpour . . . . . 19

On Grid Refinement at Point Singularities for *h–p* Methods: A. T. Chen and J. R. Rice 39

A Family of Integration Algorithms for Constitutive Equations in Finite Deformation Elasto-viscoplasticity: N. Zabaras and A. F. Muhammad Arif . . . . . 59

A Simple Non-layered Finite Element for the Elasto-plastic Analysis of Shear Flexible Plates: G. Shi and G. Z. Voyiadjis . . . . . 85

Limitations to the Large Strain Theory: Y. M. Cheng and Y. Tsui . . . . . 101

Solution and Sensitivity Analysis of a Complex Transcendental Eigenproblem with Pairs of Real Eigenvalues: D. V. Murthy . . . . . 115

Treatment of Internal Constraints by Mixed Finite Element Methods: Unification of Concepts: S. L. Weissman and R. L. Taylor . . . . . 131

Numerical Solution of Integral Equations with a Logarithmic Kernel by the Method of Arbitrary Collocation Points: A. C. Chrysakis and G. Tsamasphyros . . . . . 143

Stabilized Rapidly Convergent 18-Degrees-of-freedom Flat Shell Triangular Element: J. Fish and T. Belytschko . . . . . 149

Integration of Tresca and Mohr–Coulomb Constitutive Relations in Plane Strain Elastoplasticity: S. W. Sloan and J. R. Booker . . . . . 163

Computational Structural Mechanics and Optimal Control—the Simulation of Sub-structural Chain Theory to Linear Quadratic Optimal Control Problems: Z. Wanxie, L. Jiahao and Q. Chunhang . . . . . 197

LETTER TO THE EDITOR . . . . . 213

AUTHOR'S REPLY . . . . . 216

BOOK REVIEWS . . . . . 217

CONFERENCE DIARY . . . . . 221

Indexed or abstracted by 'Abstract Jnl. in Earthquake Engineering', 'Applied Mechanics Review', 'Boundary Element Abstracts', 'Cambridge Scientific Abstracts', 'CITIS-Civil Engineering Abstracts', 'Compumath Citation Index', 'Current Contents', 'Engineering Index Inc', 'Eng. Societies Library', 'BHRA Fluid Engineering Centre', 'Geodex', 'Geotechnical Abstracts', 'Indian Society of Earthquake Technology', 'INSPEC', 'International Petroleum Abstracts', 'Mathematical Reviews', 'Mechanics', 'Newsletter of Engineering Analysis Software', 'Science Citation Index', 'SCISEARCH Database', 'Shock and Vibration Digest', 'Zentrablatt fur Mathematik'.

*Issue No.* 2

Optimization of Mechanical Systems: On Strategy of Non-linear First-order Approximation: M. S. Kegl, B. J. Butinar and M. M. Oblak . . . . . 223

Free Vibration of Axisymmetric and Beam-like Cylindrical Shells, Partially Filled with Liquid: A. A. Lakis and M. Sinno . . . . . 235

An Application of the Arc Length Method Involving Concrete Cracking: S. Foster . . 269

Mesh Generation/Refinement Using Fractal Concepts and Iterated Function Systems: S. W. Bova and G. F. Carey . . . . . 287

Time Finite Element Methods for Structural Dynamics: G. M. Hulbert . . . . . 307

Improving Finite Element Predictions of Modes of Vibration: R. I. Mackie . . . . . 333

A General Methodology for Deriving Shear Constrained Reissner–Mindlin Plate Elements: E. Onate, O. C. Zinkiewicz, B. Suarez and R. L. Taylor . . . . . 345

A New Acoustic Interface Element for Fluid–Structure Interaction Problems: C. Rajakumar, A. Ali and S. M. Yunus . . . . . 369

A Quadrilateral Hybrid-Trefftz Plate Bending Element for the Inclusion of Warping Based on a Three-dimensional Plate Formulation: R. Piltner . . . . . 387

Static and Vibration Analysis of Laminated Composite Beams with an Interlaminar Shear Stress Continuity Theory: C.-Y. Lee, D. Liu and X. Lu . . . . . 409

Fully Automatic Two Dimensional Mesh Generation Using Normal Offsetting: B. P. Johnston and J. M. Sullivan, Jr. . . . . 425

CONFERENCE DIARY . . . . . 443

*Issue No.* 3

Material Geometry Optimization of Involute Structures using Sensitivity Derivatives with Respect to Global Design Variables: J. K. Hart, E. L. Stanton and L. A. Schmit . . . 445

Effective Modelling of Spatial Buckling of Beam Assemblages, Accounting for Warping Constraints and Rotation-dependency of Moments: A. F. Saleeb, T. Y. P. Chang and A. S. Gendy . . . . . 469

Hierarchic Models for Laminated Composites: I. Babuška, B. A. Szabó and R. L. Actis 503

An Adaptive *h–r* Boundary Element Algorithm for the Laplace Equation: W. Sun and N. G. Zamani . . . . . 537

Efficient Evaluation of the Flexibility of Tapered I-beams Accounting for Shear Deformations: L. Vu-Quoc and P. Léger . . . . . 553

A Hybrid Finite Element Formulation of the Linear Biphasic Equations for Hydrated Soft Tissue: M. E. Vermilyea and R. L. Spilker . . . . . 567

Thermal Aspects of Shear Localization in Microporous Viscoplastic Solids: A. Zavaliangos and L. Anand . . . . . 595

Time Domain Boundary Element Method for Dynamic Stress Intensity Factor Computations: J. Dominguez and R. Gallego . . . . . 635

Field-consistency Rules for a Three-noded Shear Flexible Beam Element Under Non-uniform Isoparametric Mapping: G. Prathap and B. P. Naganarayana . . . . . 649

BOOKS RECEIVED . . . . . 665

ANNOUNCEMENT . . . . . 666

*Issue No.* 4

Boundary Formulations for Shape Sensitivity of Temperature Dependent Conductivity Problems: J. H. Kane and H. Wang . . . . . 667

Time Dependent Axisymmetric Thermoelastic Boundary Element Analysis: G. F. Dargush and P. K. Banerjee . . . . . 695

Plane Strain Finite Element Simulation of Shear Band Formation During Metal Forming: M. W. Heinstein and H. T. Y. Yang. . . . . 719

Coupled Bending–torsional Dynamic Stiffness Matrix for Axially Loaded Beam Elements: J. R. Banerjee and S. A. Fisher . . . . . 739

On the Multi-grid Technique for Solving Three-dimensional Boundary Value Engineering Problems: V. E. Bulgakov and M. V. Belyi . . . . . 753

A General Finite Element Approach for Contact Stress Analysis: J. E. Mottershead, S. K. Pascoe and R. G. English . . . . . 765

Assessment of Discretized Errors and Adaptive Refinement with Quadrilateral Finite Elements: Y. C. Liu and H. A. Elmaraghy . . . . . 781

On Consistent Stress Rates in Solid Mechanics: Computational Implications: D. Peric 799

Vibration of Shear-deformable Beams using a Spline-function Approach: D. J. Dawe and S. Wang . . . . . 819

Continuity Conditions for Finite Element Analysis of Solids: J. P. Moitinho de Almeida and J. A. Teixeira de Freitas . . . . . 845

High-performance Equation Solvers and their Impact on Finite Element Analysis: E. L. Poole, N. F. Knight, Jr. and D. Dale Davis, Jr. . . . . 855

On the Coupled Thermomechanical Treatment of Necking Problems via Finite Element Methods: P. Wriggers, C. Miehe, M. Kleiber and J. C. Simo . . . . . 869

CONFERENCE DIARY . . . . . 885

*Issue No.* 5

Postintegration Methods for Numerical Integratic of Non-linear Dynamic Equations of Motion: J. Langer, M. Klasztorny and S. El-Sayed El-Bagalaty . . . . . 889

Finite Element Calculation of Energy Release Rate for 2-D Rubbery Material Problems with Non-conservative Crack Surface Tractions: J. H. Chang and E. B. Becker . . . 907

A Numerical Technique for the Analysis of Cracks Subjected to Normal Compressive Stresses: C. Scavia . . . . . 929

An Integration Scheme for Prandtl–Reuss Elastoplastic Constitutive Equations: P. Gratacos, P. Montmitonnet and J. L. Chenot . . . . . 943

A Thick–thin Triangular Plate Element: X. Zhongnian . . . . . 963

Delaunay's Mesh of a Convex Polyhedron in Dimension *d*. Application to Arbitrary Polyhedra: P. L. George and F. Hermeline . . . . . 975

SIMD Implementation of a Non-linear Transient Shell Program with Partially Structured Meshes: T. Belytschko and E. J. Plaskacz . . . . . 997

Derivation of a New Analytical Solution for a General Two-dimensional Finite-part Integral Applicable in Fracture Mechanics: K. Mayrhofer and F. D. Fischer . . . . 1027

Eight Nodes or Nine?: R. H. Macneal and R. L. Harder . . . . . 1049

Transient Dynamic and Damping Analysis of Laminated Anisotropic Plates Using a Refined Plate Theory: T. Pervez and N. Zabaras . . . . . 1059

The *s*-version of the Finite Element Method for Multilayer Laminates: J. Fish and S. Markolefas . . . . . 1081

ANNOUNCEMENT . . . . . 1107

*Issue No.* 6

Fast Decomposition of Matrices Generated by the Boundary Element Method: M. Rezayat 1109

Theoretical Development and Numerical Verification of a Geometrically Non-linear, 3-D Based Finite Element for Composite Materials: V. Anandan and N. R. Bauld, Jr . . 1119

An Optimal Method for the Solution of the Constrained Eigenvalue/Response Problem for Large Structures Comprising Rigidly-connected Substructures: S. D. Garvey and J. E. T. Penny. . . . . 1139

A New Explicit Variable Time-integration Self-starting Methodology for Computational Structural Dynamics: K. K. Tamma and J. F. D'Costa . . . . . 1165

Non-singular Boundary Integral Representation of Potential Field Gradients: V. Sladek and J. Sladek. . . . . 1181

Computing Alternative Optimal Collapse Mechanisms: T. K. H. Tam and A. Jennings 1197

ALE Finite Element Formulation for Ring Rolling Analysis: Y.-K. Hu and W. K. Liu . . 1217

On the Development of Explicit Robust Schemes for Implementation of a Class of Hyperelastic Models in Large-strain Analysis of Rubbers: A. F. Saleeb, T. Y. P. Chang and S. M. Arnold . . . . . 1237

Tetrahedral Elements for Fluid Flow: F. H. Bertrand, M. R. Gadbois and P. A. Tanguy 1251

The Dual Boundary Element Method: Effective Implementation for Crack Problems: A. Portela, M. H. Aliabadi and D. P. Rooke . . . . . 1269

Memory and Operations Count Scaling of Coupled Finite-element and Boundary-element Systems of Equations: K. D. Paulsen and W. Liu . . . . . 1289

A Study of Boundary Layers in Plates using Mindlin–Reissner and 3-D Elements: N. V. R. Rao, M. Özakça and E. Hinton . . . . . 1305

ADDENDUM – J. C. Simo and K. K. Wong, Unconditionally Stable Algorithms for Rigid Body Dynamics that Exactly Preserve Energy and Momentum, *Int. J. Numer. Methods Eng.*, **31**, 19–52 (1991): . . . . . 1321

LETTER TO THE EDITOR. . . . . 1325

AUTHOR'S REPLY . . . . . 1325

CONFERENCE DIARY . . . . . 1327

ANNOUNCEMENTS . . . . . 1329

*Issue No. 7*

The Superconvergent Patch Recovery and *a posteriori* Error Estimates. Part 1: The Recovery Technique: O. C. Zienkiewicz and J. Z. Zhu . . . . . 1331

The Superconvergent Patch Recovery and *a posteriori* Error Estimates. Part 2: O. C. Zienkiewicz and J. Z. Zhu. . . . . 1365

On the Three-Dimensional Vibration Analysis of Simultaneously Skewed and Twisted Cantilevered Parallelepipeds: O. G. McGee . . . . . 1383

Geometrically Non-linear Enhanced Strain Mixed Methods and the Method of Incompatible Modes: J. C. Simo and F. Armero . . . . . 1413

Some Improvements of Accuracy and Efficiency in Three Dimensional Direct Boundary Element Method: Y.-S. Li, T. Obata, H. Koguchi and T. Yada . . . . . 1451

Performance of Certain Iterative Methods in Solving Implicit Difference Schemes for 2–D Navier–Stokes Equations: O. P. Iliev, M. M. Makarov and P. S. Vassilevski . . 1465

Non-singular Boundary Integral Representation of Stresses: V. Sladek and J. Sladek 1481

Method of Lines Applied to Hyperbolic Fluid Transient Equations: K. Suwan and A. Anderson . . . . . 1501

Numerical Analysis of Elastic Contact Problems Using the Boundary Integral Equation Method. Part 1: Theory: B. W. Dandekar and R. J. Conant . . . . . 1513

Numerical Analysis of Elastic Contact Problems Using the Boundary Integral Equation Method. Part 2: Results: B. W. Dandekar and R. J. Conant . . . . . 1523

Shear Correction Factors for Plates and Shells: S. Vlachoutsis . . . . . 1537

*Issue No.* 8

An Assessment of Four-noded Plate Finite Elements Based on a Generalized Third-order Theory: R. C. Averill and J. N. Reddy. . . . . 1553

A Finite Element Formulation for Highly Anisotropic Incompressible Elastic Solids: C. M. Ó Brádaigh and R. B. Pipes . . . . . 1573

Rigid Body Considerations for Non-linear Finite Element Analysis: Y.-B. Yang, J.-H. Chou and L.-J. Leu . . . . . 1597

On Development of a Finite Dynamic Element and Solution of Associated Eigenproblem by a Block Lanczos Procedure: K. K. Gupta, C. L. Lawson and A. R. Ahmadi . . . 1611

Local Error Indicator in Finite Element Analysis of Laplacian Fields Based on the Green Integration Formula: K. Adamiak . . . . . 1625

Sensitivity Analysis for Non-linear Constrained Elastostatic Systems: D. A. Tortorelli 1643

A Numerical Model for Wave Scattering Problems in Infinite Media Due to P- and SV-Wave Incidences: C. Zhao, S. Valliappan and Y. C. Wang . . . . . 1661

*p*-Version Plate and Curved Shell Element for Geometrically Non-linear Analysis: R. M. Sorem and K. S. Surana . . . . . 1683

A Finite Element Formulation with Stabilization Matrix for Geometrically Non-linear Shells: J. H. Kim and S. W. Lee . . . . . 1703

A Mixed Finite Element Formulation for Non-linear Analysis of Plane Problems: C. L. Liao and J. S. Tsai . . . . . 1721

Analytical Elements of Time Domain BEM for Two-dimensional Scalar Wave Problems: C. Wang and H. Takemiya . . . . . 1737

Element by Element *a posteriori* Error Estimation of the Finite Element Analysis for Three-dimensional Elastic Problems: H. Ohtsubo and M. Kitamura. . . . . 1755

CONFERENCE DIARY . . . . . 1771

*Issue No.* 9

Elastic Postbuckling Analysis Via Finite Element and Perturbation Techniques Part I. Formulation: F. G. Flores and L. A. Godoy . . . . . 1775

The Use of Dynamic Data Structures in Finite Element Applications: D. M. Hawken, P. Townsend and M. F. Webster . . . . . 1795

A Numerical Model for Determining the Motion of a Bubble Close to a Fixed Rigid Structure in a Fluid: P. J. Harris . . . . . 1813

Solution of BEM Systems of Equations Via Iterative Techniques: W. J. Mansur, F. C. Araújo and J. E. B. Malaghini . . . . . 1823

Coupling of Physical and Modal Components for Analysis of Moving Non-linear Dynamic Systems on General Beam Structures: J. C. O. Nielsen and T. J. S. Abrahamsson . 1843

Application of Infinite Elements to Phase Change Situations on Deforming Meshes: J. M. Sullivan Jr and K. O'Neill . . . . . 1861

A Solid Shell Element for the Shell Structured Eyeball with Application to Radial Keratotomy: H.-L. Yeh, T. Huang and R. A. Schachar . . . . . 1875

Arbitrary Lagrangian–Eulerian Finite Element Analysis of Large Deformation In Contacting Bodies: S. Ghosh . . . . . 1891

Optimum Design of Structures with Both Natural Frequency and Frequency Response Constraints: T.-Y. Chen . . . . . 1927

Using Domain Decomposition to Solve Symmetric, Positive-definite Systems on the Hypercube Computer: G. L. Hennigan, S. Castillo and E. Hensel . . . . . 1941

A Finite Element for Variable Order Singularites Based on the Displacement Formulation: S. K. Maiti . . . . . 1955

Unconditionally Convergent Partitioned Solution Procedure for Dynamic Coupled Mechanical Systems: A. V. Saetta and R. V. Vitaliani . . . . . 1975

*Issue No.* 10

A Three-dimensional BEM Solution for Plasticity Using Regression Interpolation within the Plastic Field: A. Gupta, H. E. Delgado and J. M. Sullivan Jr . . . . . 1997

Analysis of Parameter Estimation Heat Conduction Problems with Phase Change Using the Finite Element Method: T. Ouyang . . . . . 2015

An Inverse Method for Determining Elastic Material Properties and a Material Interface: D. S. Schnur and N. Zabaras . . . . . 2039

Adaptive Solution Strategy for Solving Large Systems of *p*-Type Finite Element Equations: R. B. Morris, Y. Tsuji and P. Carnevali . . . . . 2059

Axisymmetric Thermoelastic Shape Sensitivity Analysis and its Application to Turbine Disc Design: B. Y. Lee and B. M. Kwak . . . . . 2073

Postbuckling Analysis of Layered Composites Using *p*-Version Finite Strips: A. Kasagi and S. Sridharan . . . . . 2091

Large Displacement Analysis of Thin-Walled Beams with Generic Open Section: A. Conci 2109

Least Squares Element Method for Boundary Eigenvalue Problems: K. Rothe . . . . 2129

A Structural Mapping Technique for Geometric Parametrization in the Optimization of Magnetic Devices: K. Weeber and S. Ratnajeevan H. Hoole . . . . . 2145

Stress Oscillations and Spurious Load Mechanisms in Variationally Inconsistent Assumed Strain Formulations: G. Prathap and B. P. Naganarayana . . . . . 2181

LETTER TO THE EDITOR. . . . . 2199

CONFERENCE DIARY . . . . . 2201

AUTHOR INDEX . . . . . 2205